

CLINICAL LEARNING GUIDES

Introduction

The aim of this work is to give you a guide for some methods of clinical examination of a patient attending the internal medicine outpatient and inpatient clinics and departments.

It will help to elicit the physical signs needed for the diagnosis and follow up of patients.

Remember !!!

This document is only a guide

1. It is not a substitute for your clinical examination books.
2. It is a guide to encourage you to read and learn more about clinical problems.
3. This guide is only for your benefit.
4. This will also help you in fulfilling most of the needs of your **multiple station clinical exam**.
5. A suggested reference website is offered to give you more details, images and videos about the clinical examination.

<http://meded.ucsd.edu/clinicalmed/extremities.htm>

NB. Please check the latest on this issue for more subjects and any updates.

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Guidelines for clinical examination

Ref: <http://meded.ucsd.edu/clinicalmed/extremities.htm>

General Examination

- 1) Ideally you should wash your hands with soap and water before beginning examination, and use the hand wipes that are located near the sinks (or perform an alcohol hand rub). This is sometimes not feasible, so please, remember to do it whenever possible.
- 2) Display a professional attitude towards the patient during the exam
 - a) Introduce yourself as a medical student
 - b) Always explain the procedure of examination to the patient.
 - c) Dress professionally in white coat
- 3) Mind appropriate interaction with the patient—sensitivity to privacy, comfort and dignity.
- 4) Cover the patient appropriately during each segment of the exam.
- 5) Use proper sequencing of the examination and proper pacing.
- 6) All palpation and auscultation must be done on bare skin.

1-Mental Status Examination (MSE)

Getting Ready:

1. *Prepare the needed equipment.*
2. Assure that the patient can pay attention. The MSE can not be done in patients with coma, or aphasia or non-fluent in the language of the examiner

Comment on

Conscious level:

Fully conscious

Drowsy

Stuperous

Comatosed

Orientation to time, place, and persons

Mood: happy, depressed or angry

2-Body build

A- Weight assessed by Body mass index (BMI) = $\text{weight(kg)}/\text{height}^2(\text{m})$.

> 25 = underweight, 20-25 average weight, <30 = overweight,

30-40 = obese, >40 = morbid obesity

B- Stature (height and span)

a. Dwarfism

b. Gigantism

3-Decubitus:

Position of patient in bed

1. Restless
2. Lateral decubitus: prefer to lie on one side
3. Orthopnic: cannot sleep flat and sit in bed
4. Squatting position
5. Prayer posture: patient prefers to kneel

4- Complexion

A- Pallor:

1. In Lips: slightly pull the lower lip outward and look for the colour inside
2. In Hands: if palmar creases are pale Hb is less than 7 gm/dl.

B- Jaundice:

Yellowish discoloration of the sclera and mucous membranes.

1. Look for jaundice in lower fornix of the eye: asking the patient to look upwards and facing the day light.
2. In the soft palate.

C - Cyanosis:

Bluish discoloration of skin and mucous membranes

1. Central: examined in the under surface and edges of the tongue
2. Peripheral: examined in the tip of the nose, lobule of ear and tip of fingers.

5-Vital Signs: Pulse, BP, Temperature, and Respiratory rate

I - Examine the Radial Pulse (for 15 seconds if the rhythm is regular - 60 seconds if rate is slow or irregular)

- 1- Prepare equipment: Watch or clock with a counter for seconds.
- 2- Assist the patient to pronate and slightly flex the forearm.
- 3- Locate the radial artery just medial to the distal radius and proximal to the patient's wrist on the thumb side.
- 4- Place the tips of the index, middle & ring fingers just proximal to the patient's wrist on the thumb side, orienting them over the vessel.
- 5- Push lightly at first, gradually adding pressure till you feel the pulse .
- 6- Comment on

- a. **Rate:** Measure the rate of the pulse..
- b. Compare to apical pulse (if the pulse is irregular). The difference is the pulse deficit.

c. Comment on **Rhythm:**

- i. Regular.
- ii. If there are extra beats (Regular irregularity).
- iii. Irregular irregularity (if there is no specific pattern as in case of atrial fibrillation).

d. Comment on **Volume:**

- i. Normal.
- ii. Big
- iii. Small (**Weak pulse — Pulsus parvus**)
- iv. Variable volume.

e. Comment on **special character:**

- i. **Water hammer pulse:** (can be elicited by raising the patient's arm high while palpating the forearm)

ii. **Pulsus alternans**

1. Measure the arterial blood pressure (ABP)
2. As the cuff is deflated from high pressure the sounds from alternate beats are first audible
3. As the pressure declines, the number of sounds is suddenly doubled.

iii. **Pulsus paradoxus**

1. Palpate the radial pulse volume
2. Ask the patient to take a deep breath and notice the volume of the pulse decreasing
3. Confirm by the sphygmomanometer

- a. Place the cuff as if you are taking the ABP by auscultatory method
- b. After taking the systolic reading at the resting state, ask the patient to take deep inspiration, the sounds will disappear
- c. Deflate the cuff until you hear again the sound and record the systolic blood pressure during deep inspiration
- d. Compare both readings if more than 10 mm it is pulsus paradoxus.

iv. Pulsus bisferiens

f. Comment on **condition of the vessel wall**:

- i. Place the tip of the three fingers (ring, middle, index) over the radial artery
- ii. Press proximally using the index finger to close the radial artery.
- iii. Press by the ring finger distally to prevent the back flow.
- iv. Palpate the vessel wall by the middle finger.

g. Comment on **the equality of volume** in both arms

7- Examination of other palpable arterial pulsations

Femoral artery:

- a) Ask the patient to lie supine
- b) Partially flex the knee
- c) Abduct and externally rotate the hip
- d) Using the tips of your fingers
- e) Feel the pulse below the mid-inguinale point
- f) Compare both sides.

Popliteal artery:

- a) Ask the patient to lie supine and partially flex the knees
- b) Feel the pulse against the lower end of the femur with the fingers encircling and supporting the knee from both sides.

Alternate method

- a) Ask the patient to lie prone
- b) Using the tips of your fingers with the tips of the thumbs of both hands pressing against the femur
- c) Feel along the line of the artery
- d) Compare both sides.

Posterior tibial artery:

- a) Ask the patient to lie supine
- b) Using the tips of your fingers
- c) Feel the pulse in the groove midway between the medial malleolus and the heel (tendo-achilles)
- d) Compare both sides.

Dorsalis pedis artery:

- a) Using the tips of your fingers
- b) Feel the pulse lateral to the extensor hallucis longus tendon and proximal to the first metatarsal space against the navicular bone
- c) Compare both sides.

Brachial artery:

- a) Partially flex the elbow
- b) Using the thumb
- c) Feel the pulse over the elbow just medial to the biceps tendon.

Superficial temporal artery

- a) Palpate superior to the zygomatic arch, anterior and superior to the tragus.

Common carotid artery

- b) Palpate on either side of the thyroid cartilage deep to the sternomastoid muscle (medial border)
- c) Move the muscle laterally
- d) Fingers are slipped from the anterior aspect into the cleft between the muscle and the cartilage
- e) Feel the artery at the upper part of the thyroid cartilage near the hyoid bone.

NB. Palpate each side at a time.

II- MEASURING THE BLOOD PRESSURE

- 1- Remove the clothes off the arm
- 2- Place the cuff around the upper arm with the lower edge of the cuff, with its tubing connections, placed about one inch above the antecubital space across the inner aspect of the elbow.
- 3- Wrap the cuff with the inflatable inner bladder (rubber bag) centered over the area of the brachial artery
- 4- Arm relaxed and supported at the heart level
- 5- Close the valve

6- *Palpatory method:*

- a. Palpate brachial pulse medial to the tendon of biceps. Inflate the cuff while palpating the radial pulse
- b. Inflate the cuff rapidly to 70 mmHg then 10 mmHg at time till the pulse is no longer felt. This is the approximate systolic blood pressure,
- c. Then deflate the cuff

7- Wait 15 seconds after deflating the cuff before auscultating the BP

8- *Auscultatory method:*

- a. Apply the bell (or diaphragm in obese arm) of the stethoscope over the brachial artery, just below the cuff. (*Avoid touching the cuff or tubing*).
- b. Inflate the cuff rapidly then open the valve slightly and maintain a constant rate of deflation at approximately 2 mm per second.

9- Listen throughout the entire range of deflation until 10mm Hg below the level of the diastolic reading.

- a. The systolic reading (Korotkov 1) will be the first loud sound to be heard.
- b. The sudden reduction of sound will be (Korotkov IV).
- c. The diastolic reading (Korotkov V) will be the disappearance of the sound. (*In case there is no disappearance of the sound, as in cases of hyperdynamic circulation, consider Korotkov IV (the muffling of the sound) as the diastolic reading.*)

10- In *Standing position*: Standing BP is measured 2 minutes after standing

III - Measuring Axillary Temperature

1. Prepare equipment (thermometer, tray, mercury thermometer, disinfectant, cotton balls).
2. Explain the procedure to the patient.
3. Wash the hands.
4. Hold the thermometer opposite to the bulb.
5. Remove the disinfectant from the thermometer by rinsing with cold water.
6. Dry the thermometer by wiping it from the bulb to the stem using a firm twisting motion.
7. Shake the mercury down to 35°C using a snapping wrist motion
8. Ask the patient to lie in a supine or semi-Fowler position.

9. Place the bulb of the thermometer in the client's clean, dry axilla.
10. Hold the arm of the patient firmly to the side with the elbow flexed and the hand in contact with the chest.
11. Wait **three to five** minutes before removing the thermometer.
12. Read the thermometer by holding it at eye-level and rotating the stem until the mercury is clearly seen
13. Return thermometer to disinfectant solution
14. Wash the hands
15. Record the findings and explain to the patient.

IV- EXAMINE THE RESPIRATORY RATE

- 1 - Prepare the equipment: Watch or clock with a counter for seconds.
- 2- Assist the patient to a comfortable semi-sitting position
- 3- Do not explain the procedure to the patient, pretend you are measuring the radial pulse, while inspecting and counting the elevations of the chest wall in for 1 minute
- 4- If you could not count the respiratory rate easily because of clothes or any other reason, let the patient lie flat and pretend that you are measuring the apical pulse or performing cardiac examination while counting the respiratory rate in 30 seconds.
- 5- Record the results as breathes/minute and comment on regularity and difficulty.

6-Head

I - Inspect the **skull**, scalp, hair by parting the hair in at least three places

II - Inspect the face

a) Facial expression

- i) Respiratory distress
- ii) Endocrine disorders
 - (1)Hyperthyroidism
 - (2)Myxedema
 - (3)Cushing's syndrome
 - (4)Acromegaly
- iii) Nervous disorders
 - (1)Mask face
 - (2)Myasthenia gravis
 - (3)Myopathic face
- iv) Scleroderma

- v) Mongolism
- vi) Thalassemia
- vii) Toxic look
- viii) Uremic look
- b) Color changes**
 - i) Congestion
 - ii) Malar flush
 - iii) Discoid lupus
- c) Symmetry**
 - i) Palpebral fissures equal, nasolabial folds present bilaterally.

III - Eyes

- 1) Inspect external eye
 - a) Stand in front of the patient and survey the eyes for position and alignment with each other
 - b) Inspect the eyebrows quantity and distribution
 - c) Inspect the eyelids for edema, rash, xanthelasma, retraction or ptosis.
 - d) Inspect the region of the lacrimal glands
 - e) Inspect the conjunctiva and sclera
 - f) Inspect the cornea and lens, using a penlight shined oblique across the eye.
 - g) Inspect each iris.
 - h) Inspect the pupils for size, shape and symmetry
- 2) Assess pupillary reflexes (turn out the room light if necessary)
 - a) To light
 - b) To accommodation
- 3) Assess extraocular movements

IV - Ears

- 1) Inspect the external ear—auricle or pinna (tophi, ear discharge ... etc.)
- 2) Assess hearing
 - i) Weber test
 - ii) Rinne test

V - Nose

- 1) Shape (large, saddle, working ala nasi and/or discharge).
- 2) Inspect the anterior and inferior surfaces of the nose
 - a) Push gently on the tip of the nose to widen the nostrils
 - b) Use a penlight to view the nasal vestibule
- 3) Palpate the frontal and maxillary sinuses for tenderness.

VI - Mouth and Pharynx

1. *Fresh breath*
2. Inspect the oral mucosa using a good light and a tongue blade
3. *Lips*- pink, moist, no lesions or inflammation
4. *Tongue*, dorsum: pink, moist, rough; strength: symmetrically strong; ventrally has prominent blood vessels and moist.
5. *Buccal Mucosa* (color will vary by race); xerostomia is excessive dryness
6. *Gums*: well defined margins, no pockets, no swelling or bleeding.
7. *Palate*
 - a. hard and soft palates are concave and pink, hard has ridges,
 - b. *soft* is smooth; no lesions or malformation
8. *Throat*
 - a. Cranial Nerves IX, X: soft palate and uvula rise with saying Ah
 - b. Tonsils, no swelling or exudates.

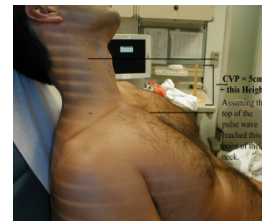
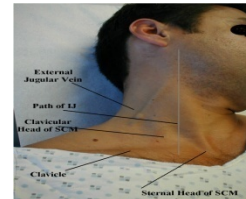
VI – Parotid glands

7- Neck

- 1) Inspect the neck for pulsations:

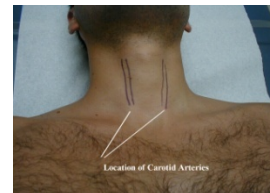
Jugular venous pulsations

- a) Turn the patient's head slightly away from the side you are inspecting (sternomastoid relaxed)
- b) Raise or lower the bed until you identify the pulsations
- c) Confirm the type of pulsation venous vs. arterial by applying the appropriate maneuvers.
- d) If venous pulsations: Identify the highest point of pulsation then measure the vertical distance of this point above the sternal angle (Venous pressure)



- 2) Palpate the carotid pulsation

- a) Place your left index and middle fingers (or thumb) on the right carotid artery
 - i) Note amplitude and contour of the pulse wave
 - ii) Never palpate both carotids simultaneously
- b) Use your right finger or thumb to palpate the left carotid artery



- 3) Auscultate the carotid arteries for bruits with the bell of the stethoscope

- a) Ask the patient to take a deep breath and hold it to eliminate breath sounds

- 4) Tracheal position (see local chest examination)
- 5) Thyroid gland (see local thyroid examination)
- 6) Lymph nodes (see LN examination)
- 7) Cervical spine mobility (see local Rheumatological examination)

8- The Upper Extremities

Examination of the hands and arms is usually quite brief in the asymptomatic patient. Pay particular attention to the following:

The Hands:

a. Appearance of hand and fingers:

- 1 Abnormal shape: e.g. long fingers, acromegalic hand
- 2 Any obvious deformity
- 3 Discoloration: Do they appear relatively red and well perfused or white/mottled
- 4 Edema

b. Nails:

- 1 *Clubbing* and its degree
- 2 *Cyanosis*:
- 3 *Splinter hemorrhages*: Short, thin, brown, linear streaks in the nails of some patients (the minority) with endocarditis.
- 4 *Nail pitting in Psoriasis*
- 5 *Nail spooning*

c. Temperature and sweating

d. Skin texture, mobility and turgor

- e. **Capillary refill**: This is a mechanism for testing arterial perfusion. Press the nail bed or tip of any finger for several seconds, causing the underlying skin to whiten. After releasing pressure, the normal pink color should return in 2-3 seconds.

f. Radial pulse examination

g. Rheumatological examination of hands and wrists

h. Tremors: fine, flapping and other tremors

i. Neurological examination.

8- Examination of the Lower Extremities

The Femoral Region: As with examination of any other area of the body, exposure is the key. Socks, stockings, pants and skirts should all be removed.

1. Begin by simply **looking** at the area in question, which is on either side of the crease separating the leg from the groin region. Make note of any discrete **swellings**, which might represent adenopathy or a femoral hernia.
2. **Palpate** the area, feeling carefully for the **femoral pulses** as well as for inguinal/femoral **adenopathy** (nodes which surround the femoral artery and vein up to one cm in size are considered non-pathologic).
3. For femoral hernia, patient stands and coughs.

The Popliteal Region:

1. Move down to the level of the knee allowing it to remain slightly bent.
2. Place your hands around the knee and push the tips of your fingers into the popliteal fossa in an effort to feel the **popliteal pulse**.

Below The Knee: Now, turn your attention to the lower leg (i.e. from the knee to the foot). First, examine with your eyes, paying attention to:

Inspection

1. **Color:**
 1. ***Venous insufficiency*** is characterized by a dark bluish/purple discoloration.
 2. Patients with severe ***arterial insufficiency***, on the other hand, may have relatively pale skin as a result of under perfusion.
 3. Dead tissue turns **black** (gangrene).
 4. ***Cellulitis*** (infection in the skin) will cause the skin to appear bright red.
 5. Pigmentation and rash.
2. **Swelling of leg:**
 - a. If present, is it symmetric?
 - b. To what level does the swelling exist? (i.e. ankle, calf, knee etc.)

3. **Nail growth:** Nail thickening and deformity
4. **Skin:** Any obvious growths? Shiny, hairless appearance (seen with arterial insufficiency)? Dilated or varicose superficial veins? Ulceration of the skin can occur in the setting of either venous or arterial disease.
5. **The bottom of the foot** and between the toes.

Palpation

Feel the skin, noting in particular:

1. **Temperature:** The back of your hand may be the most sensitive surface for detecting subtle temperature difference. Compare one leg to the other. It's also OK to use your own skin (e.g. face) as a reference point.
 1. Arterial insufficiency will often cause the skin to feel cool.
 2. Inflammation, on the other hand, causes hyperemia and relative warmth.
2. **Edema:** It may be difficult to detect small amounts of fluid.
 1. Look around the malleoli, as fluid will cause a loss of the normally distinct appearing edges of the bone.
 2. Similarly, fluid will tend to "fill in" the spaces between the extensor tendons on the top of the foot, causing them to appear less defined.
 3. If you're not sure whether fluid is present, push on the area for several seconds, release, and then gently rub your finger over that same spot, feeling for the presence of a "divot," referred to as pitting.
 4. Note if edema is unilateral or bilateral.
3. **Capillary Refill:** Push on the tip of the great toe or the nail bed until blanching occurs. Then release and note how long it takes for the red color to return, a reflection of blood inflow to the distal aspect of the lower extremity. Longer than 2-3 seconds is considered abnormal and consistent with arterial insufficiency.

The Distal Pulses:

- a. The Dorsalis Pedis (DP) Artery:
- b. The Posterior Tibial (PT) Artery:

9- Guidelines of Lymph Nodes Examination

A-Cervical LNs:

Inspection:

Inspect for any visible swelling, LNs, oedema, erythema, red streaks, ulcer or any skin lesion.



Palpation:

I - Horizontal Group:

1- *Method of examination:* Examine from behind, laterally flex neck towards the site examined, by rolling with tips of fingers, bilateral at same time (submental, submandibular, tonsillar, preauricular) from front (post auricular, occipital).

2- Site and drainage:

i- Submental: Just below the chin. Drainage: The teeth and intra-oral cavity.

ii- Submandibular, Along the underside of the jaw on either side. Drainage: The structures in the floor of the mouth.

iii- Preauricular: in front of the ear. Drainage: conjunctivita.

iv- Tonsillar, Located just below the angle of the mandible. Drainage: The tonsillar and posterior pharyngeal regions

v- Post auricular. Drainage: nasopharynx, otitis media, scalp

vi- Occipital. Drainage: scalp,

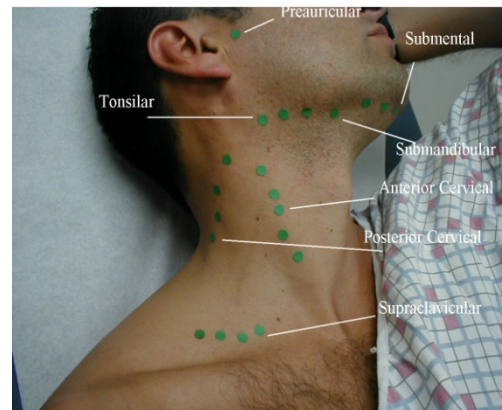
3- Comment:

Comment: site, size, number, consistency, tenderness, relation to each other, and to surrounding structures, overlying skin, and drainage areas.

II - Longitudinal Group:

Palpating Anterior Cervical Lymph Nodes

1. **Anterior Cervical (both superficial and deep):** Nodes that lie both on top of and beneath the sternocleidomastoid muscle (SCM) on either side of the neck, from the angle of the jaw to the top of the clavicle. This muscle allows the head to turn to the right and left. The right SCM turns the head to the left and vice versa. They can be easily identified by asking the patients to turn their head into your hand while you provide resistance. **Drainage:** The internal structures of the throat as well as part of the posterior pharynx, tonsils, and thyroid gland.



2. **Posterior Cervical:** Extend in a line posterior to the SCMs but in front of the trapezius, **Drainage:** The skin on the back of the head. Also frequently enlarged during upper respiratory infections (e.g. mononucleosis).
3. **Supra-clavicular:** In the hollow above the clavicle, just lateral to where it joins the sternum. **Drainage:** Part of the thoracic cavity, abdomen.

Method of palpation:

From back:

- Superficial & upper, lower deep cervical LNs.
- Supraclavicular LN with pt arm down and or in waist with valsalva.

From front:

- Deep scalene LNs (bilateral one by one),
- Post Cervical LNs.

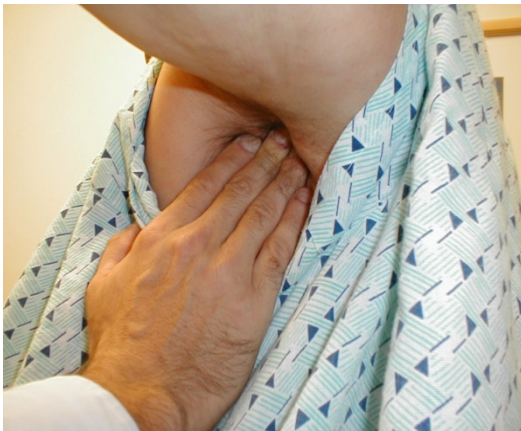
Comment: site, size, number, consistency, tenderness, relation to each other, and to surrounding structures, overlying skin, and drainage areas.

B-Axillary LNs:

Inspection: for any visible swelling, LNs, oedema, erythema, red streaks, ulcer or any skin lesion.

Palpation:

Palpation of the Axilla



1-Methods:

Examine the patient from the front:

- With the patient's arm adducted, rest his/her left forearm on your right forearm
 - Insert your right hand into the patient's left axilla
 - Slide the fingers against the chest wall
 - Palpate the anterior axillary fold
- Palpate the lateral axillary wall
 - Using the tips of your fingers
 - Use the left hand for the patient's left side
 - With the palm directed laterally against the upper end of the humerus, palpate for the lymph nodes

Palpate the posterior axillary fold from behind

2- Sites: anterior, medial, apical, lateral, and posterior.

3- Drainage area: arm, breast in female pt.

4- Comment: site, size, number, consistency, tenderness, relation to each others, and to surrounding structures, skin overlying, and drainage areas.

C-Epitrochlear LN:

Inspection:

for any visible swelling, LNs, oedema, erythema, red streaks, ulcer or any skin lesion.

Palpation:

1-Method:

- Place the patient's elbow in a semiflexed position
- For examining the right side, put your right palm over the posterior aspect of the patient's right elbow. Do the opposite when examining the left side.
- Using the thumb for palpation, roll the epitrochlear lymph node against the bone in an antro-posterior direction

3- Drainage area: hand and forearm.

4-Comment: site, size, number, consistency, tenderness, relation to each others, and to surrounding structures, skin overlying, and drainage areas

D-Inguinal LNs:

Inspection:

for any visible swelling, LNs, oedema, erythema, red streaks, ulcer or any skin lesion.

Palpation:

1- Method:

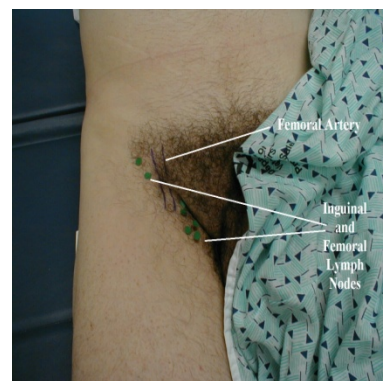
- i. Pt lie in supine position with abducted externally rotated hip.
- ii. Palpate above and below the inguinal ligament
- iii. Examine both sides

2- Sites: horizontal along inguinal

ligament and vertical along saphenous vein,

3-Drainage area: foot, leg, perineum.

4-Comment: site, size, number, consistency, tenderness, relation to each others, and to surrounding structures, skin overlying, and drainage areas.



E-Popliteal LNs:

Inspection:

For any visible swelling, LNs, oedema, erythema, red streaks, ulcer or any skin lesion.

Palpation:

1-Method: pt in supine position and hip and knee flexed, and examined by rolling against lower end of tibia from front or lower end of femur from the back.

2-Site: both popliteal fossa side by side

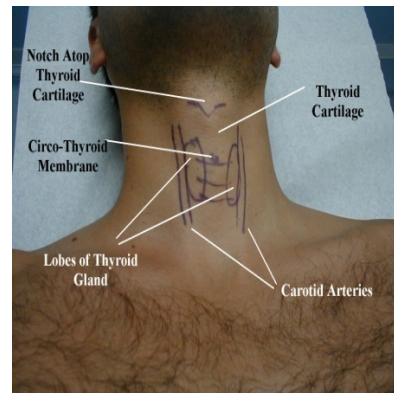
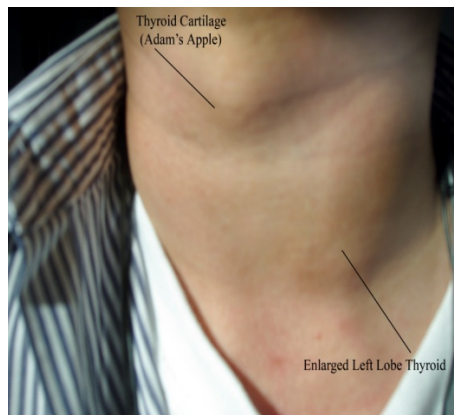
3-Drainage area: LL

4-Comment: site, size, number, consistency, tenderness, relation to each others, and to surrounding structures, skin overlying, and drainage areas.

Thyroid gland Examination

(Posterior approach technique)

Patient Position The patient could be either sitting or standing, looking forwards with relaxed neck muscles and a slightly extended neck.



Inspection

- Ask the patient to swallow and then protrude the tongue
- Comment on the size and shape of the thyroid gland
- Jerky carotids
- Overlying skin

Palpation (posterior approach)

- Stand behind the patient who should be sitting
- Fix the trachea with the left hand, palpate the right lobe with the right hand (then repeated for the other side)
- Ask the patient to swallow and palpate the isthmus (which could be done also by the anterior approach)
- Examine the cervical lymph nodes on both sides
- Examine the carotid pulsations on both sides
- For both lobes of the thyroid comment on :
 - Size
 - Surface (diffuse or nodular swelling)
 - Consistency
 - Tenderness
 - Presence of thrill
 - Relation to surrounding structures



Percussion

Direct percussion on the sternum to detect possible retrosternal extension.

Auscultation

Both lobes of the thyroid to detect possible bruit in hyperthyroidism

Eye Examination

- Inspect the eye for
 - Lid retraction (rim of sclera above the cornea, staring look – lid lag)
 - Eyelid (puffiness – tremors)
 - Exophthalmos (proptosis) (stand behind sitting patient and tilt the head backwards – or laterally using a ruler or exophthalmometer)
 - Conjunctiva (chemosis or injection)
- Confrontation test (see neurology)
- Test for convergence (see neurology)

The minimal points that you should comment on in General Examination:

1. Mental state
2. Facial Features of medical importance
3. Decubitus
4. Complexion
5. Vital signs
6. Clubbing and tremors
7. JVP
8. Thyroid
9. Lymph nodes
10. Pedal edema

Endocrinology Cases Checklist

General Procedures

1. Greet the patient and Introduce yourself
2. Stand on the right side of the patient
3. Explain procedure
4. Proper patient positioning
5. Warm hands

Acromegaly

Face Examination, comment on

- Coarse features (big nose, ear, lips)
- Forehead thick supraorbital ridge and skin fold
- Prominent nasolabial fold
- Infraorbital puffiness
- Oily sweat
- Mandibular prognathism and overbite occlusion
- Separated teeth
- Macroglossia
- Field of vision (confrontation test)
- Deep voice

Neck Examination, comment on

- Skin tags
- Goiter

Hands and Feet Examination, comment on

- Large hands (spade shaped) and thick skin
- Thick fingers (sausage-shaped)
- Wasting of thenar muscles (carpal tunnel syndrome)
- Osteoarthritis (knee crepitus)
- Eliciting peripheral neuritis
- Eliciting proximal myopathy

Abdominal Examination, comment on

- Organomegaly (liver and spleen examination)
- Comment on BP** (is the patient hypertensive?)

A Patient with Diabetes

Full general and local system examination is done with special comment on:

- Consciousness
- Built (weight – height – BMI – waist – W/H ratio, body habitus)
- Air hunger (deep breathing)
- Acetone smell
- Measure BP both erect and supine
- Eye
 - Squint / ptosis
 - Ophthalmoplegia
 - Cataract
 - Fundus examination
 - Arcus senilis and xanthelasma
- Neck
 - Carotid pulse and bruit
 - Goiter
- Skin
- Acanthosis nigricans
 - Skin & Soft tissue infections
 - Vitiligo
 - Insulin injection site
- Limbs
 - Dupuytren's contracture
 - Trigger finger
 - Charcot joints
 - Wasting of small muscles of the hand
 - Edema
 - Peripheral pulse
 - Skin color
 - Temperature gradient
 - Trophic changes or ulcers
 - Interdigital fungal infection
 - Glove and stock hypoaesthesia
 - Monofilament test
 - Sense of vibration

Thyroid Examination

Patient Position The patient could be either sitting or standing, looking forwards with relaxed neck muscles and a slightly extended neck.

Inspection

- Ask the patient to swallow and then protrude the tongue
- Comment on the size and shape of the thyroid gland
- Jerky carotids
- Overlying skin

Palpation (posterior approach)

- Stand behind the patient who should be sitting
- Fix the trachea with the left hand, palpate the right lobe with the right hand (then repeated for the other side)
- Ask the patient to swallow and palpate the isthmus (which could be done also by the anterior approach)
- Examine the cervical lymph nodes on both sides
- Examine the carotid pulsations on both sides
- For both lobes of the thyroid comment on :
 - Size
 - Surface (diffuse or nodular swelling)
 - Consistency
 - Tenderness
 - Presence of thrill
 - Relation to surrounding structures

Percussion

Direct percussion on the sternum to detect possible retrosternal extension.

Auscultation

Both lobes of the thyroid to detect possible bruit in hyperthyroidism

Eye Examination

- Inspect the eye for
 - Lid retraction (rim of sclera above the cornea, staring look – lid lag)
 - Eyelid (puffiness – tremors)
 - Exophthalmos (proptosis) (stand behind sitting patient and tilt the head backwards – or laterally using a ruler or exophthalmometer)
 - Conjunctiva (chemosis or injection)
- Confrontation test (see neurology)
- Test for convergence (see neurology)

Hand Examination

- Warm , sweaty
- Tremors (use a paper sheet)
- Pulse (tachy or bradycardia)

<h2><u>Cushing Syndrome</u></h2>

Inspect the face and comment on

- Moon face (deposition of fat on the temporal and buccal regions)
- Plethora
- Hirsutism and acne vulgaris in females (hyperandrogenism)

Comment on body fat distribution

- Supraclavicular pad of fat
- Truncal obesity
- Interscapular and dorsocervical fat (buffalo hump)

Examine the skin and comment on

- Skin thinning over the limbs (visible veins and cigarette paper sign)
- Striae rubra (stretch marks)
 - Pink or violaceous
 - Wide (0.5 – 2 cm)
 - Present on abdomen, axilla, limbs
 - Depressed base
- Skin bruises
- Hyperpigmentation (ACTH-dependent Cushing)

Examine Blood Pressure (to detect possible hypertension)

Diabetes Sheet (if developing diabetes)

Musculoskeletal & Neurological Examination comment on

- Short stature
- Osteoporosis (tender spine)
- Proximal myopathy
- Peripheral neuropathy (if developed diabetes)

Primary Adrenal Insufficiency (Addison's disease)

Check hyperpigmentation in the following sites

- Cheeks and forehead and V area (sun exposed areas)
- Palm creases
- Hand knuckles
- Buccal mucosa and gums
- Scars (recent rather than old)
- Friction areas (e.g. elbow and knees)
- Nipples and areola

Check for hypopigmented areas of vitaligo (evidence of autoimmunity)

Measure BP in the erect and supine posture to detect orthostatic hypotension

NB. Examine for loss of pubic and axillary hair in secondary forms of adrenal insufficiency (e.g.

Local Cardiac Examination

Pre-exam checklist:

- 1) Introduce yourself to patient
- 2) Wash hands.
- 3) Stand to the right of the patient's bed.
- 4) Explain procedure to the patient
- 5) Prepare a stethoscope with bell and diaphragm
- 6) Make sure hands are warm
- 7) Put the patient is in supine position with the upper body elevated 30 to 45 degrees. If orthopnic; put him in semi-sitting position.
- 8) Ensure good light.
- 9) Expose the patient's chest well.

NB. Remember that although assessment of pulse and blood pressure are discussed in the vital signs section they are actually important elements of the cardiac exam then we have also to:

Inspect the neck for jugular venous pulsations

Inspect the neck for carotid pulsations

Palpate the carotid pulsation

Auscultate the carotid arteries for bruits with the bell of the stethoscope

Inspection of the precordium:

- 1- Look tangentially, from the foot end of the patient for precordial bulge.
- 2- Look for dilated veins on the chest wall, or any other thoracic cage abnormalities such as scars of previous operation (e.g. valvotomy, mid sternotomy,...etc.).
- 3- Look tangentially, from the side of the patient for apical pulsation.
- 4- Look tangentially, from the side of the patient for other pulsations in:

- Suprasternal area
- Aortic area
- Pulmonary area
- Parasternal area
- Epigastrium

Palpation of precordium

1) Ask pt. if any part is tender, examine that last.

The palm of your right hand is placed across the patient's left chest so that it covers the area over the heart. The heel should rest along the sternal border with the extended fingers lying below the left nipple. NB. Palpation of the precordium of a female patient is best done by placing the palm of your right hand directly beneath the patient's left breast such that the edge of your index finger rests against the inferior surface of the breast. Displace a woman's breast upward or laterally, or ask her to do this for you.



During palpation you need to comment on:

I- Apex:

1. Site
2. Character
3. Thrill

-Localize the apex [Point of Maximum Impulse (PMI)] beat by inspection.

-Palpate apex by palmar surface of the hand.

-Localize the apex with the tip of your index finger.

a -The normal sized and functioning ventricle will generate a penny sized impulse that is best felt in the mid-clavicular line, roughly at the 5th intercostal space.

b - If the ventricle becomes dilated, the PMI is displaced laterally.

c - In cases of significant enlargement, the PMI will be located near the axilla.

- Comment on the duration of the impulse in case of sustained apex you feel the impulse for a longer period of time.

- Feel for thrill, and time it (systolic or diastolic).

II- Palpate the left parasternal area using the palmar aspect of your right hand for thrills.

III- Use the palmar aspect at the base of metacarpals to confirm presence of parasternal heave.

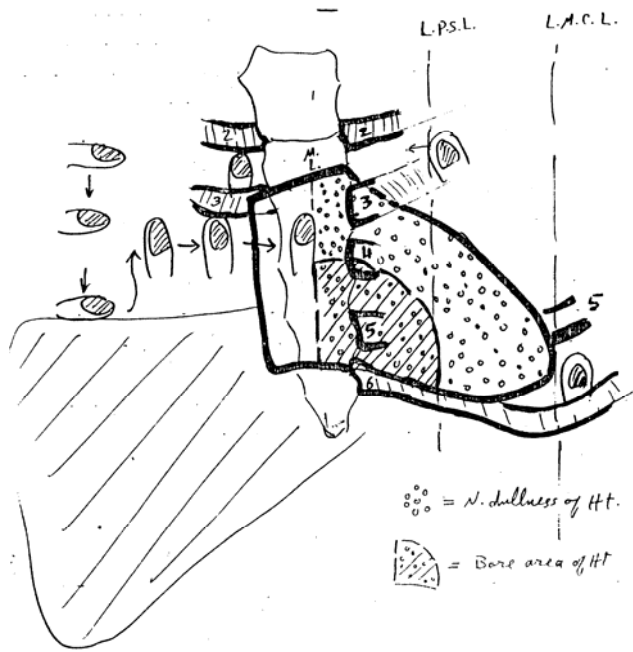
IV- Put the tips of the fingers in the second left intercostal space to elicit palpable second sound (diastolic shock).

V- Place the palm of the right hand on the epigastrium and slide the fingers under the rib cage

Percussion of the precordium

Place the left hand on the right side of the chest wall horizontally and percuss downward to locate the upper border of the liver in the 5th space MCL.

Go up one space, in the 4th space, direct the hands vertically, then percuss (Stroke the center of the second phalanx of the middle finger sharply with the tip of the pad of the right middle finger with the movement coming from the wrist joint) and Start from resonant to dull in the right third, fourth and fifth intercostal spaces.



Start from resonant to dull in the left third, fourth and fifth intercostal spaces to define the left cardiac border.

Start from resonant to dull in the second right intercostal spaces

Start from resonant to dull in the second left intercostal spaces

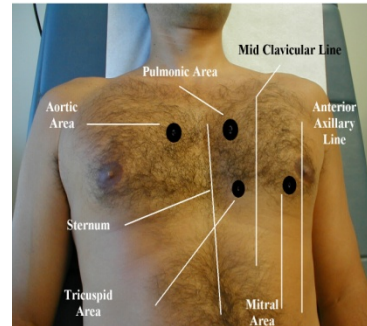
Percuss directly over the lower half of the sternum using the tip of the index finger to define dullness of right ventricular hypertrophy.

Percuss outside the apex.

Comment on the size of the heart and the great vessels.

Auscultation of the precordium

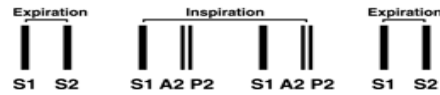
- 1) Auscultate the base of the heart starting from the first aortic area (second right intercostal space).
- 2) Move stethoscope to the pulmonary area (second left intercostal space).
- 3) Move stethoscope to the second aortic area (third left intercostal space).
- 4) Move stethoscope down left sternal border.
- 5) Move stethoscope to tricuspid area (lower left sternal border).
- 6) Move stethoscope to mitral area (fifth left intercostal space).
- 7) Move stethoscope to axilla.
- 8) Listen first with the diaphragm for high pitched sounds (first and second heart sounds, mitral regurge, aortic regurge and rub). Time with the carotid pulse.
- 9) Listen by the cone (bell) for low pitched sounds (third and fourth heart sounds and mitral stenosis). Time with the carotid pulse.
- 10) Ask the patient to roll onto his left side.
- 11) Identify the apical impulse.
- 12) Auscultate the apex with the bell.
- 13) Ask the patient to sit up, lean forward, exhale completely and hold breath in expiration. Listen to aortic areas down the left sternal border to the apex.
- 14) While the patient is sitting evaluate the splitting of the second sound in the pulmonary area (second left intercostal space).
- 15) Comment on:**
A- First and second heart sounds



NORMAL CARDIAC CYCLE



PHYSIOLOGIC SPLITTING OF S2



First heart sound (S1): comment on

Loudness: Audible, Muffled or Accentuated

Second heart sound (S2): comment on

Loudness: Audible, Muffled or Accentuated

Splitting: Present or not

B- Added sounds (third and fourth heart sounds, opening snap of mitral stenosis).

EXTRA HEART SOUNDS - S3



EXTRA HEART SOUNDS - S4



EXTRA HEART SOUNDS - S3 AND S4 Summation Gallop



C- Presence of murmur. If present comment on:

1. Timing: Systolic or diastolic

2. Character: Soft, Blowing or harsh

3. Intensity: Grade 1 - 6

- 1/6... Can only be heard with careful listening
- 2/6... Readily audible as soon as the stethoscope is applied to the chest
- 3/6... Louder than 2/6
- 4/6... As loud as 3/6 but accompanied by a thrill
- 5/6... Audible even when only the edge of the stethoscope touches the chest
- 6/6... Audible to the naked ear

Most murmurs are between 1/6 and 3/6. Louder generally (but not always) indicates greater pathology.

4. Area of maximum intensity:

5. Propagation: To which area

6. Relation to respiration:

7. Relation to position:

8. Relation to exercise:

16 – Do not forget to auscultate the carotids

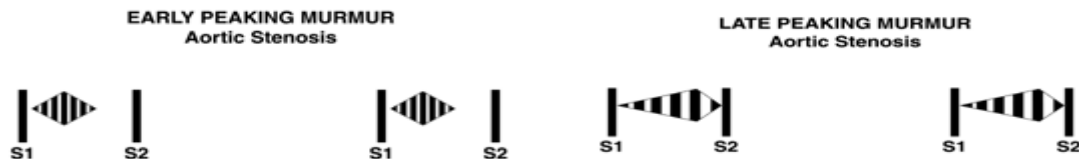
18 – Do not forget to auscultate the lung bases

Identifying the Most Common Murmurs:

1. Systolic Murmurs: In the adult population, these generally represent either aortic stenosis or mitral regurgitation. To distinguish between them, remember the following:

Murmurs of Aortic Stenosis (AS):

- Tend to be loudest along the upper sternal borders and get softer as you move down and out towards the axilla.
- Have a harsh quality (i.e. get louder and then softer.. also referred to as a crescendo decrescendo, systolic ejection, or diamond shaped murmur).



- Are better heard when the patient sits up and exhales.
- Are heard in the carotid arteries and over the right clavicle.

Murmurs of Mitral Regurgitation (MR):

- Sound the same throughout systole.
- Generally sound like the "shshing" noise produced when you pucker your lips and blow through clenched teeth.
- Get louder as you move your stethoscope towards the axilla.
- Will get even louder if you roll the patient onto their left side while keeping your stethoscope over the mitral area of the chest wall and listening as they move.

MITRAL REGURGITATION



2. Diastolic Murmurs: Tend to be softer and therefore much more difficult to hear than those occurring during systole.

In adults they may represent either aortic regurgitation or mitral stenosis, neither of which is too common.

AORTIC INSUFFICIENCY



Aortic Regurgitation (AR); Aortic Insufficiency (AI):

- a. Is best heard along the left para-sternal border, as this is the direction of the regurgitant flow.
- b. Becomes softer towards the end of diastole (a.k.a. decrescendo).
- c. Can be accentuated by having the patient sit up, lean forward and exhale while you listen.
- d. Occasionally accompanies aortic stenosis, so listen carefully for regurgitation in patients with AS.

Mitral Stenosis (MS):

- a. Heard best over the apex.
- b. Can be accentuated by having the patient roll onto their left side while you listen with the bell of your stethoscope.
- c. Associated with a soft, low pitched sound preceding the murmur, called the opening snap. This is the noise caused by the calcified valve "snapping" open. It can, however, be pretty hard to detect.

A few final comments about auscultation:

1. **Pulmonic valve murmurs** are rare in the adult population and, even when present, are difficult to hear due to the relatively low pressures generated by the right side of the heart.

2. **Tricuspid regurgitation (TR)** is relatively common. Try to listen along both the low left and right sternal borders (areas where the tricuspid valve is best assessed) and compare this to the mitral area. Move your stethoscope slowly across the precordium and note if there is any change in the character/intensity of the murmur. TR murmurs are also accentuated by inhalation, which increases venous return and therefore flow across the valve.

3. **Rubs:** These are uncommon sounds produced when the parietal and visceral pericardium becomes inflamed, generating a creaky-scratchy noise as they rub together. The classic rub is actually made up of three sounds, associated with atrial contraction, ventricular contraction, and ventricular filling. In reality, it's rare to hear all 3 components (more commonly, 2 are apparent). They can be accentuated by listening when the patient sits up, leans forward and exhales.

Chest Examination

➤ **Pre-exam checklist:**

- 10) Introduce yourself to patient
- 11) Always examine from the right side of the patient.
- 12) Ask the patient to lower his gown to waist level.
- 13) Use proper sequencing of the examination
- 14) Perform the examination only after explaining to the patient what the examination entails.

➤ **Inspection of anterior chest wall**

- 1) Ask the patient to lie supine.
- 2) Ask the patient to lower his gown to waist level.
- 3) Stand at the feet of patient.
- 4) Inspect the shape of the patient's chest (notice the ratio of antero-posterior and transverse diameters).
- 5) Inspect the symmetry of the patient's chest on both sides with comparison.
- 6) Inspect patient's chest normal breathing movement.
- 7) Inspect patient's chest for accessory muscle use.
- 8) Inspect patient's chest for retraction of lower intercostal spaces.
- 9) Stand again to the right of patient and look tangentially for apical and epigastric pulsation.
- 10) Inspect the chest wall and skin for swelling, scars, skin eruption or engorged veins.

➤ **Palpation of anterior chest wall**

- 1) Stand to the right of the patient.
- 2) Ask the patient to lie supine.
- 3) Palpate upper lung zone to confirm the movement by placing the palms in the infraclavicular fossa and the two thumbs in the midline at the level of suprasternal notch. Let the patient inspire deeply and let your thumbs follow chest movement.
- 4) Palpate middle lung zone by putting the palm in the middle part with tips of thumbs in the midline. Let the patient inspire deeply and let your thumbs follow chest movement.

- 5) Palpate lower lung zone by putting the palm in the lower part with tips of thumbs in the midline. Let the patient inspire deeply and let your thumbs to follow chest movement.
- 6) Palpate for palpable rhonchi, pleural rub or chest wall tenderness by putting the palm on various areas of chest wall.
- 7) Palpate for **Tactile vocal fremitus**
 - a) Place the palm of hand over various area of chest wall in the direction of bronchial tree away from midline with comparison.
 - b) Ask the patient to repeat the words “44” in arabic
- 8) **Tracheal examination:**
 - a) Stand to the right of the patient.
 - b) Ask the patient to sit up with the head straight.
 - c) Inspect for tracheal position “Trill’s sign”.
 - d) **Tracheal shift:** Insert the index finger in horizontal position in the pouch between the medial end of sternomastoid and the lateral aspect of trachea with comparison.
 - e) Check **the cricosternal distances**. This is the distance between the cricoid cartilage and the suprasternal notch. If it is less than 3 finger breadths, this indicates hyperinflation of the lung.
 - f) **Tracheal descent:** place the tip of the index finger on the thyroid cartilage during inspiration to observe its descent.

Percussion of the chest

- **Percussion of the anterior chest wall**
- 1- Stand to the right of the patient.
 - 2- Ask the patient to lie supine.
 - 3- Use **light** percussion.
 - 4- **Krönig’s isthmus:** Percuss both areas right and left from dullness to resonance (start from the neck) with comparison.
 - 5- Percuss both clavicles directly (over medial third)
 - 6- Percuss the infraclavicular regions.
 - 7- Percuss both parasternal lines right and left, from the second space to the sixth space with comparison.
 - 8- Spare bare area to be percussed late with special areas percussion.
 - 9- Percuss both midclavicular lines right and left, from the second space to the sixth space with comparison.
 - 10- Comment on dullness found.

➤ **Percussion of the lateral chest wall**

- 1- Stand to the right of the patient.
- 2- Ask the patient to lie supine and raise his hands above his head.
- 3- Use **light** percussion.
- 4- Percuss both anterior axillary lines right and left, from the fourth space to the eighth space with comparison.
- 5- Percuss both middle axillary lines right and left, from the fourth space to the eighth space with comparison.
- Percuss both posterior axillary lines right and left, from the fourth space to the eighth space with comparison.
- 6- Comment on dullness found.

Upper border of the liver:

- 1- Stand to the right of the patient.
- 2- Ask the patient to lie supine.
- 3- Use **heavy** percussion.
- 4- Start in the right midclavicular line from second space down to the first dullness.
- 5- Decide the upper border of the liver.

Bare area of the heart:

- 1- Stand to the right of the patient.
- 2- Ask the patient to lie supine.
- 3- Place the left hand in the left 4th and the 5th spaces between midline and parasternal line.
- 4- Percuss **lightly** with right hand.
- 5- Comment.

Tidal percussion:

- 1- Stand to the right of the patient.
- 2- Ask the patient to sit.
- 3- After percussing the back using heavy percussion if any infrascapular dullness was found, fix the left hand over it and ask the patient to take a deep breath and hold it then percuss again.
- 4- Comment on whether it changed to be resonant or not and explain.

Alternative method of percussion: (you can proceed in a different order)

➤ **Upper border of the liver:**

- 1- Stand to the right of the patient.

- 2-Ask the patient to lie supine.
- 3- Use heavy percussion.
- 4- Start in the right midclavicular line from second space down to the first dullness.
- 5-Decide the upper border of the liver.

➤ **Bare area of the heart:**

- 1- Stand to the right of the patient.
- 2-Ask the patient to lie supine.
- 3- Place the left hand in the left 4th and the 5th spaces between midline and parasternal line.
- 4-Percuss lightly with right hand.
- 5- Comment.

➤ **Percussion of the anterior chest wall**

- 1- Stand to the right of the patient.
- 2-Ask the patient to lie supine.
- 3- Use light percussion.
- 4-Percuss both parasternal lines right and left, from the second space to the sixth space with comparison.
- 5-Percuss both midclavicular lines right and left, from the second space to the sixth space with comparison.
- 6-Comment on dullness found.

➤ **Percussion of the lateral chest wall**

- 1- Stand to the right of the patient.
- 2-Ask the patient to lie supine and raise his hands above his head.
- 3- Use light percussion.
- 4-Percuss both anterior axillary lines right and left, from the fourth space to the eighth space with comparison.
- 5-Percuss both middle axillary lines right and left, from the fourth space to the eighth space with comparison.
- 6-Percuss both posterior axillary lines right and left, from the fourth space to the eighth space with comparison.
- 7- Comment on dullness found.

➤ **Kronig's isthmus:**

- 1- Stand to the right of the patient.
- 2- Ask the patient to sit and stand behind him.
- 3- Use light percussion.

- 4- Percuss both areas right and left from dullness to resonance with comparison.
- 5- Comment on dullness found.

Auscultation of the chest

Auscultation of the anterior chest wall

- 1) Stand to the right of the patient
- 2) Ask the patient to lie supine.
- 3) Auscultate both midclavicular lines right & left, from the second space to the sixth space with comparison.
- 4) Ask the patient to say ' 44 ' and auscultate both midclavicular lines right & left, from the second space to the sixth space with comparison

Auscultation of the lateral chest wall

- 1) Auscultate both midaxillary lines right & left, from the fourth space to the eighth space with comparison
- 2) Ask the patient to say ' 44 ' and auscultate both midaxillary lines right & left, from the fourth space to the eighth space with comparison

Comment on :

- a) Breath sounds (character, intensity)
- b) Adventitious sounds (wheeze, crepitations)
- c) Type of wheeze if present (inspiratory or expiratory, localized or generalized)
- d) Type of crepitations if present (fine or coarse, change with cough)
- e) Vocal resonance

Examination of posterior chest wall

➤ Inspection of posterior chest wall

- 1) Stand behind the patient in a midline position.
- 2) The patient should be sitting with the posterior thorax exposed.
- 3) Inspect the cervical, thoracic and upper lumbar spine for deformity.
- 4) Assess for costovertebral tenderness by placing the ball of one hand in the costovertebral angle and strike it with the ulnar surface of your fist
- 5) Inspect for scars.

➤ **Palpation of posterior chest wall**

- 1) Stand behind the patient in a midline position.
- 2) The patient should be sitting with the posterior thorax exposed.
- 3) Assess extent and symmetry of lower thoracic expansion by
 - a) Place your thumbs at the level of the 10th ribs with your fingers loosely grasping the rib cage and gently slide them medially.
 - b) Ask the patient to inhale deeply and observe whether your thumbs move apart symmetrically.
- 4) With palms of hands, assess symmetry of fremitus throughout lung fields.

➤ **Percussion of the posterior chest wall**

- 1- Stand to the right of the patient.
- 2- Ask the patient to sit and his hands folded across the anterior chest wall.
- 3- Use **heavy** percussion.
- 4- Percuss suprascapular area with comparison
- 5- Percuss both scapulae directly.
- 6- Percuss both infrascapular areas to the 10th space comparing right and left sides.
- 7- Percuss interscapular area on the right and left sides with comparison
- 8- Comment on dullness found.

➤ **Auscultation of the posterior chest wall**

- 1) Stand to the right of the patient.
- 2) Ask the patient to sit and his hands folded across the anterior chest wall
- 3) Auscultate both scapular lines right & left, from the apex to the tenth space with comparison.
- 4) Ask the patient to say '44' and auscultate both scapular lines right & left, from the apex to the tenth space.
- 5) Comment on :
 - a) Breath sounds (character, intensity)
 - b) Adventitious sounds (wheeze, crepitations)
 - c) Type of wheeze if present (inspiratory or expiratory, localized or generalized)
 - d) Type of crepitations if present (fine or coarse, change with cough).
 - e) Vocal resonance.

Examination of the Abdomen

GETTING READY

Greet the patient respectfully and with kindness.

Explain the procedure to the patient.

Wash hands thoroughly and dry them.

Ask the patient to undress from the symphysis pubis to just above the xiphoid process, allowing the patient to cover with a clean sheet.

Ask the patient to lie flat on the back with the arms at side and legs extended. *Or ask the patient to flex the hips to 45° and the knees to 90° in order to relax the abdominal muscles.*

INSPECTION:

Look from the foot end of the patient tangentially and comment on:

- a. Contour of the central abdomen (flat, distended or scaphoid).
- b. Localized enlargement due mass or organomegaly.
- c. Abdominal movements with respiration.
- d. Pulsations
- e. Visible peristalsis
- f. Costal margin
- g. Divarication of recti (ask the patient to rise from supine position without using his arms)
- h. Umbilicus: site, shape, discharge, pigmentation, ulceration, infiltration.
- i. Hernial orifices (bulges that are elicited by coughing while patient is standing)
- j. Skin (pigmentations, scars, striae, sinuses, hair distribution, dilated veins: determine the direction of the flow by placing two fingers on the vein, sliding one finger along the vein to empty it and then releasing one finger and watching to see which way the empty segment fills).

PALPATION:

- Stand by the right side of the patient
- Make sure that the hand is warm
- Instruct the patient to flex the hips and knees in order to relax the abdominal muscles and open the mouth and breathe quietly in and out.
- Ask the patient whether there is a painful area or a mass.

- Start palpation away from painful area and proceed systematically to other regions approaching the affected area last of all.
- Place hands quite flat on the abdomen using pads of fingers and the palm not the finger tips.

Light palpation (superficial palpation):

- Start in right iliac fossa palpating lightly and work anticlockwise to end in the right lumbar area
- Palpate each quadrant of the abdomen lightly to detect tenderness, rigidity, or superficial swelling.
- In case of Swelling: Ask the patient to contract the abdominal wall muscles by raising the head (differentiate between intra and extraabdominal swelling) and Notice the swelling mobility with respiration

Comment on:

1. Rigidity
2. Tenderness
3. Palpable swelling

Deep palpation:

- Start palpation of the normal solid viscera (the liver, the spleen and the kidneys):

A. Palpation of the liver:

- Place your right hand on the right iliac fossa in mid clavicular line (MCL) in one of the following positions: Resting transversely parallel to the costal margin (at a right angle with the linea semilunaris) or Placed with fingers pointing towards the head of the patient.
- Ask the patient to take a deep breath.
- Keep the hand still during inspiration
- Ask the patient to expire, slide the hand a little nearer to the right costal margin till the lower border of the right lobe of the liver is palpated.
- Put the hand in the midline and repeat the above steps till the lower border of the left lobe of the liver is palpated.
- Put one hand on the liver anteriorly and the other hand at the back.
- Ask the patient to hold his breath and feel for pulsation

B. Palpation of the spleen:

1-The standard method:

- Start palpation from the right iliac fossa with the tips of the examining hand directed towards the left axilla.
- Follow the rules of palpation moving toward the left hypochondrium until the spleen is felt.

2-Bimanual examination

- Start palpation from the right iliac fossa with the tips of the examining hand directed towards the left axilla
- Place the left hand over the lateral aspect of the left costal margin, exerting a certain amount of compression.
- Follow the rules of palpation moving toward the left hypochondrium until the spleen is felt.

3-The right lateral position method: (if the spleen is not felt by above method):

- Ask the patient to turn to the right side
- Insinuate the hand below the costal margin
- Ask the patient to take a deep breath
- Press till the lower edge of the spleen is felt

4-The hooking method

- Stand on the left side of the patient's head
- Place the fingers of both hands over the costal margin.
- Instruct the patient to take deep breath.

C. Palpation of the kidneys:

To feel the right kidney:

- Put the left hand behind the patient's right loin (between the last rib and the iliac crest)
- Lift the loin and the kidney forward.
- Put the right hand on the right lumbar region just above the anterior superior iliac spine and ask the patient to take a deep breath.
- During expiration push the right hand deeply but gently and keep it during inspiration
- Repeat as the patient takes his breath.

To feel the left kidney:

- Repeat the same procedure on the left side by either standing on the patient's left side or by leaning across the patient
- Put the left hand in the left loin and feel the kidney with the right hand.

D. The Gall bladder

E. Palpate the Aorta and para-aortic glands

F. The Urinary bladder

G. Rt & Lt lower quadrants.

F. If a swelling is palpable, illicit its features

PALPATION IN THE PRESENCE OF TENSE ASCITES: THE DIPPING METHOD

- This method of palpation is performed by a quick pressure of the tips of the fingers over the region where the edge of the organ is expected.

PERCUSSION:

- Percuss for ascites and over any masses.
- Start from resonant to dull in the midline

A. Percussion of the liver (span of the liver):

- Determine the upper border of the liver by heavy percussion starting from the 2nd intercostal space opposite the sternocostal junction
- Percuss down along each inter-costal space in the MCL; when reaching the dullness asked the patient to take a deep breath and hold it
- Confirm by tidal percussion
- Measure the distance between the upper border (by percussion) and lower border (by palpation) in the right mid-clavicular line.

B. Percussion of the Spleen:

- Percussion of the Traube space
- Percuss the anterior axillary line 8-9th space while patient supine
- Ask the patient to take a deep inspiration and repeat percussion

C. Percussion for Shifting Dullness:

- Instruct the patient to lie in the supine position
- Place the fingers parallel to the flanks (in the longitudinal axis)

- Start percussion from the midline down to the flank till eliciting a dull tone.
- On detecting dullness, ask the patient to turn to the opposite side, while keeping the examining hand over the exact site of dullness.
- Keep the hand in position till the patient rests on the opposite side,
- Percuss again in this new position, if the previously dull note becomes resonant then ascitic fluid is probably present.
- Repeat percussion on the other side of the abdomen to confirm the presence of ascites.

D. Testing for ascites in the knee elbow position: (If shifting dullness is negative)

- Percuss around the umbilicus while the patient is kneeling in the knee-elbow position

DETECTION OF ASCITES BY FLUID THRILL:

- Instruct the patient to lie in the supine position
- Place one hand flat over the lumbar region on one side
- Get the patient (or assistant) to put the hand in the midline of the abdomen
- Tap or flick the opposite lumbar region

AUSCULTATION

- Intestinal sounds
- Venous hum in the epigastrium,
- Rub over the liver and spleen
- Renal artery bruit (on the left and right sides of the epigastrium or in the back below the last rib)
- Succussion splash
- Scratch sign to detect hepatomegaly

EXAMINATION OF THE BACK

Ask the patient to sit

Inspect for any swellings, deformities or scars

Palpate for edema over the sacrum

Palpate for the tenderness in the renal angles

Palpate for tenderness over vertebrae

Auscultate the renal angles for bruit

Percuss the renal angle (posteriorly).

Rheumatological Examination guidelines

Picture adapted from:

http://www.worldortho.com/dev/index.php?option=com_content&view=article&catid=&id=411:musculoskeletal-examination

Gait:

Observe the patient's gait for rhythm and symmetry.

Upper limbs:

Rheumatological examination of hands and wrists

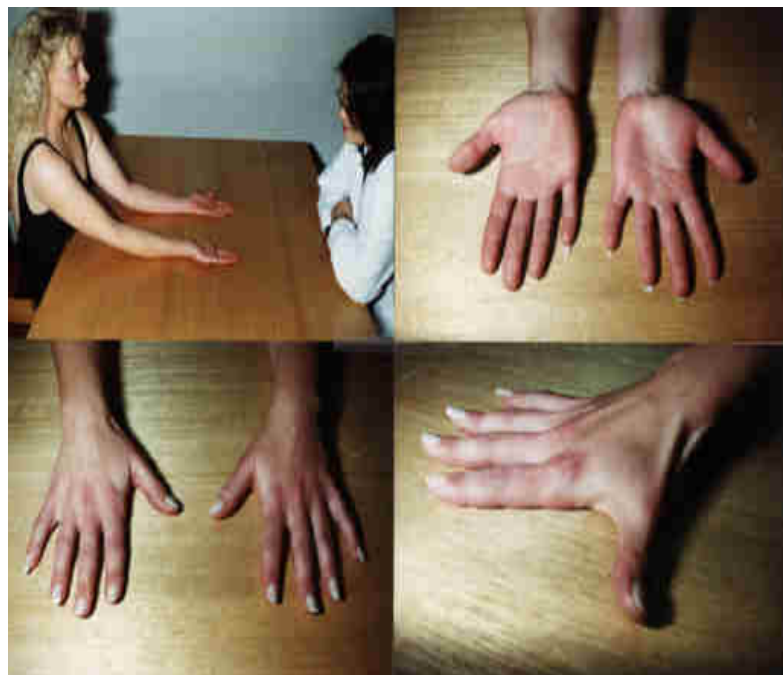
Getting ready:

Greeted the patient with kindness.

Introduced him/herself to the patient.

Inspection:

Inspect the hand & wrists for:
Swelling,
Deformity,
Nodule (heberden's nodes, Bouchard nod, tc),
Muscle wasting,
Skin abnormality
and Nail abnormality.



Palpation:

Palpate the hand for tenderness, synovial thickening & for increased **warmth and sweating**.

Perform

Metacarpal squeeze test

palpate

Metacarpophalangeal joints

Proximal interphalangeal joints

Distal interphalangeal, joints

Wrist joint palpation for tenderness, synovial thickening



Movement:

Ask the patient to open and spread the fingers, of both sides



close the fingers (**power grip**), of both sides



To pinch the tip of index finger and thumb (**precision pinch**). of both sides and feel its power



To pinch the tip of index finger and thumb (**precision pinch**). of both sides and feel its power

Compare active with passive if active range limited,

Ask the patient to put his hands together in the position of **prayer** and then to lower the hands keeping the palms together. This demonstrates the range of **dorsiflexion of the wrists**.



Ask the patient to place the back of his hands together and to raise the arms upwards. This demonstrates the range of **flexion of wrists**.



Examination of the elbow

Getting ready:

Greeted the patient with kindness.
Introduced him/herself to the patient.

Inspection:

Inspect for:

Deformity,
Nodule,
Muscle wasting,
Skin abnormality.

Palpation:

Palpate the upper limb joints for:
tenderness,
swelling or
increased **warmth**.



Movement:

Instruct the patient to bend and straighten both elbows simultaneously (0-150°),

With elbows flexed to 90° to turn hands palm up (supination 0-90°) and then palms down (pronation 0-90°).



Examination of the shoulders

Getting ready:

Greeted the patient with kindness.

Introduced him/herself to the patient.

Inspection:

Inspect for

Deformity,

Nodule,

Muscle wasting,

Skin abnormality from the front and the back

Palpation:

Palpate the Sternoclavicular joint (SC), acromioclavicular joint (AC) and genohumeral joints

PALPATION

Prior to palpating the patient's shoulders, ask if they are experiencing any pain.

It is often useful to have the patient point to the site where they are experiencing discomfort.

Equally you should instruct the patient to inform you if they experience any pain during the examination.

During palpation observe for any signs of tenderness, swelling, temperature or crepitus.

You should palpate both shoulder joints in a systematic approach. A suggested approach would be:

1) Sternoclavicular joint

2) Clavicle

3) Acromioclavicular joint

4) Humeral head

5) Coracoid process

6) Deltoid muscle

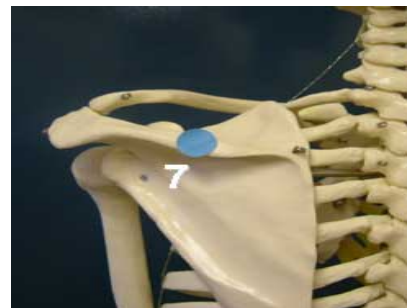
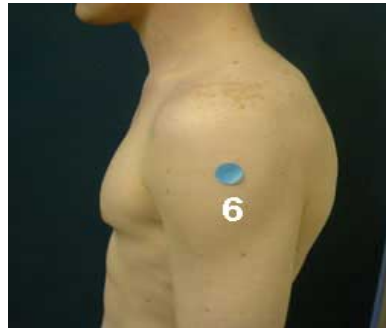
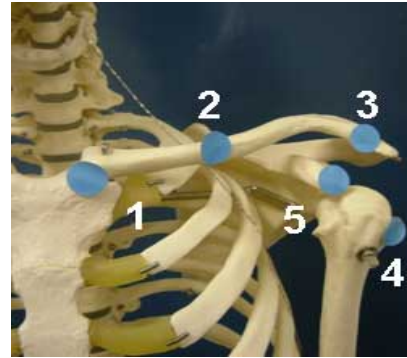
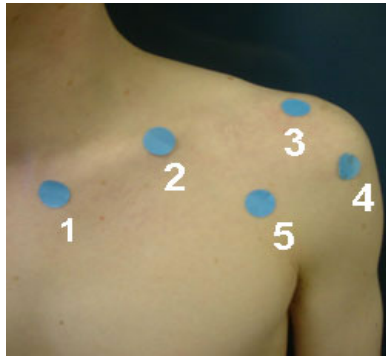
7) Spine of scapula

8) Supraspinatus muscle

9) Infraspinatus muscle

10) Trapezus muscle

(then repeat on the other side)

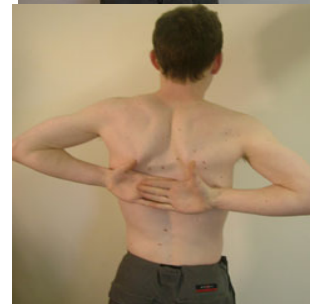


Movement:

Ask the patient to put both hands behind the head with elbows pointing laterally (flexion, abduction and external rotation),



To put the arms down and reach up behind the back (extension, adduction and full internal rotation).



Rheumatological examination of ankles and feet

Getting ready:

Greeted the patient with kindness.

Introduced him/herself to the patient.

Inspection:

Inspect the **ankles and feet** joints for:

Swelling,

Deformity,

Nodule

Muscle wasting,

Skin abnormality and

Nail abnormality.

Palpation:

Palpate joints for:

tenderness,

swelling or

increased warmth.



Perform Metatarsal squeeze test

Movement:

Ask the patient to dorsiflex (20°) and plantar flex (30°) each ankle (wide range of normal).



Passively evert (10°) and invert (20°) the subtalar joints with the ankles in neutral.



Flex and extend the MTP joints.

Rheumatological examination of the knees

Getting ready:

Greeted the patient with kindness.

Introduced him/herself to the patient.

Inspection:

Inspect the **knee** joints for:

Swelling,
Deformity,
Muscle wasting and
Skin abnormality.

Palpation:

Palpate joints for:

tenderness,
swelling or
increased **warmth**



Palpate knee for temperature



Palpate around joint margins

Examine for knee effusion

Patellar tap test:

- Slide your hand down the patient's thigh, pushing down over the suprapatellar pouch, so that any effusion is forced behind the patella.

- When you reach the upper pole of the patella, keep your hand there and maintain pressure.



Milk the suprapatellar pouch

- Using the index & middle finger of the other hand push the patella down gently.

- Does it bounce? If so this may indicate the presence of an effusion.



Patella tap

Bulge test (massage test)

- Using your thumb and index finger - milk down any fluid from above the knee.

- Keep this hand in this position.

- Now with the other hand, stroke the medial side of the knee to empty the medial compartment of fluid then stroke the lateral side.

- Observe the medial side of the knee for any bulging? This may indicate an effusion.



Applying pressure to the medial side of the knee



Movement:

Ask the patient to flex each knee in turn and observe the range of movement (0-150°) and any signs of pain.

Ask the patient straightens each knee, place a hand on the knee to feel the crepitus.

Rheumatological examination of the hip

Getting ready: Greeted the patient with kindness.
Introduced him/herself to the patient.

Palpation:

Palpate the greater trochanter area

Movement: www.qub.ac.uk/cskills/hipexamination.htm

FLEXION

Have the patient flex their knees & move their hip joint into the flexed position as far as possible. (*Normal range ~ 120 degree*)

(If you keep the knee extended the range of movement in the hip joint is limited by tension in the hamstring muscles)



ABDUCTION

Make sure you stabilize the pelvis by placing a hand on the opposite anterior iliac crest and holding the ankle with the other hand. The hip is abducted until the pelvis tilts. (*Normal range of movement ~ 45 degrees*)



ADDUCTION

Cross one leg over the other until pelvis begins to tilt. (*Normal range of movement ~ 30 degrees*)



INTERNAL ROTATION

Flex the hip and knee to 90 degrees. Now move the leg laterally. (*Normal range of movement ~ 45 degrees*)



EXTERNAL ROTATION

Again with the hip and knee flexed move the patient's leg medially. (*Normal range of movement ~ 60 degrees*)



EXTENSION

Have the patient lie prone on the couch. Immobilize the pelvis with one hand while extending the hip with the other hand.



Examine the temporomandibular joint

Getting ready:

Greeted the patient with kindness.
Introduced him/herself to the patient.

Places first two fingers of each hand in front of tragus of ear and instruct patient to open and close mouth.



Examination of the spine and posture

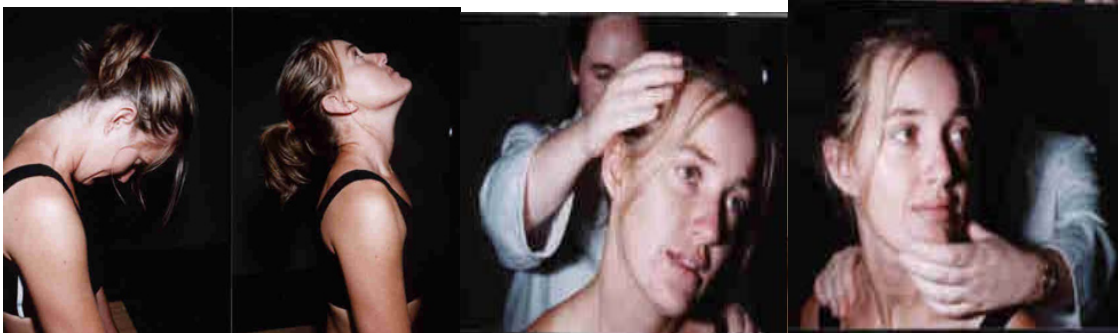
Inspect the standing patient's spine and posture from behind and the side for:

- abnormal kyphosis
- or lordosis
- or flattening of the longitudinal arch of the foot.

Palpate spine for tenderness

Movement

Cervical spine: Ask the patient to look right, left, and then tilt the head sideways aiming to touch each ear on the shoulder.



Thoracic spines

Measure the chest expansion by a tape at the level of nipple.



Lumber spine :

Ask the patient to try to touch the toes without bending the knees
patient flex forward, examines curve of spine from upper thoracic to sacrum by **Schober's Test**

To tilt sideways from the vertical to try to touch the sides of the knees

Lumbar flexion

“Try to touch your toes without bending knees”



Lumbar extension

“Lean back”



Lateral lumbar flexion (Both sides)

“Slide your hand down your leg”



Thoracolumbar rotation

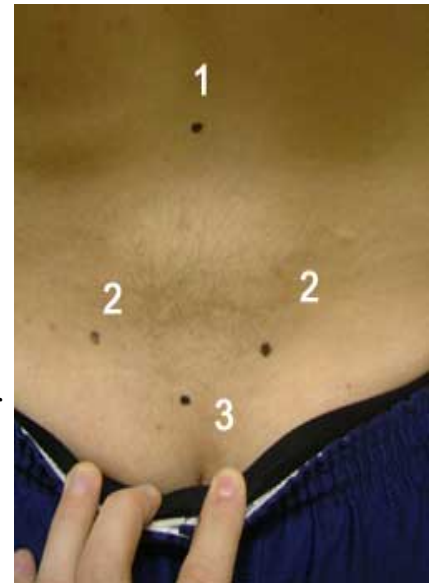
“Sit down and turn round, looking over your shoulder”

(Sitting down helps fix the patients pelvis)



Other tests *Schober's test*

In lumbar spine flexion, hip flexion can compensate to a considerable extent for a loss of spinal flexion. You may want to consider performing Schober's test to objectively measure the degree of spinal flexion. Firstly identify the *Dimples of Venus* (2). Now in the midline, use a tape measure and pen to mark a point 10 cm superior (1) to, and another mark 5 cm inferior (3) to this point.



Ask the patient to attempt to “touch their toes” (*i.e. Flexing their lumbar spine*). The distance between these two marks should be measured when the patient's spine is flexed maximally.



The distance should increase to more than 21cm in a normal patient. A modified way to demonstrate lumbar spine flexion is to place several fingers over the lower lumbar spinous processes and ask the patient to bend forward and touch their toes as best as possible. In a normal spine your fingers should move part.



Check List Samples

Station number
()

**Examine the Complexion in
this patient**

Examine the Complexion in this patient

	ID number				
Stand to the right of the patient's bed.					
Introduce yourself to patient					
<u>Complexion</u>					
<u>I - Pallor:</u>					
3. Inner side of the Lips					
<u>II - Jaundice:</u>					
3. In lower fornix of the eye: asking the patient to look upwards and facing the day light.					
<u>III - Cyanosis:</u>					
3. Central: examined in the tongue					
4. Peripheral: examined in the tip of the nose, lobule of ear and tip of fingers.					
Total					

(0) Not Done (1) Done improperly (2) Done properly

Station Number

()

**Inspect and palpate the precordium of
this patient**

Inspect and palpate the precordium of this patient

	ID number				
Stand to the right of the patient's bed.					
Greet the patient					
<u>Inspection</u>					
Look tangentially, from the foot end of the patient for precordial bulge.					
Look tangentially, from the side of the patient for apical and other pulsations.					
<u>Palpation of precordium</u>					
Palpate the apex by palmar surface of the hand.					
Localized the apex with the tip of the finger.					
Count the intercostal spaces to localize the site of the apex					
Palpate the left parasternal area using the palmar aspect of the right hand					
Put the tips of the fingers in the second left intercostal space to elicit palpable second sound (diastolic shock).					
Palpate for epigastric pulsations by placing the palm of the right hand on the epigastrium and sliding the fingers under the rib cage					
Total					

(0) Not Done (1) Done improperly (2) Done properly